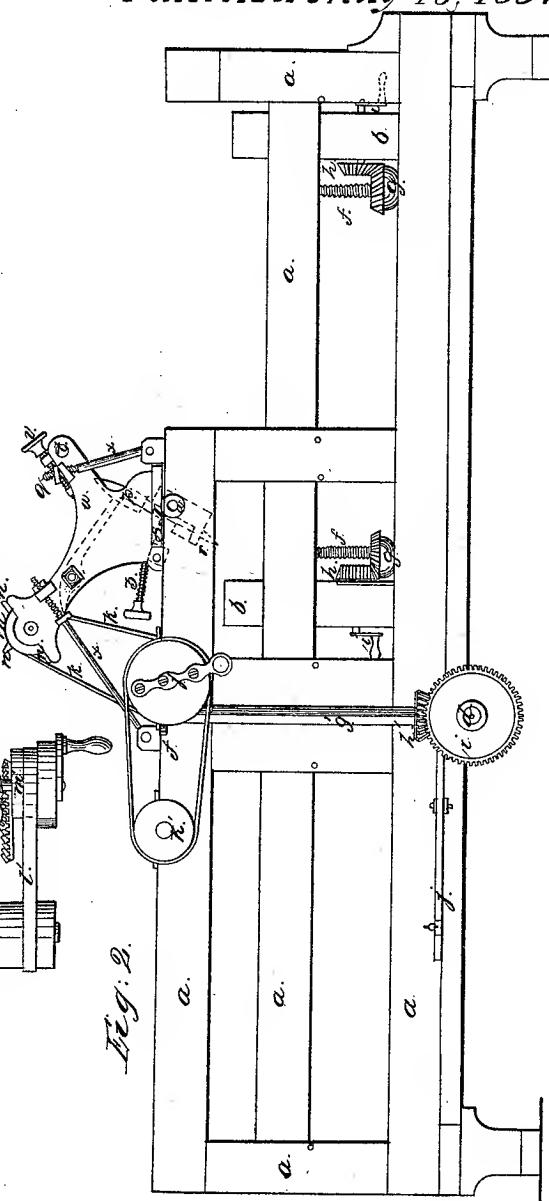
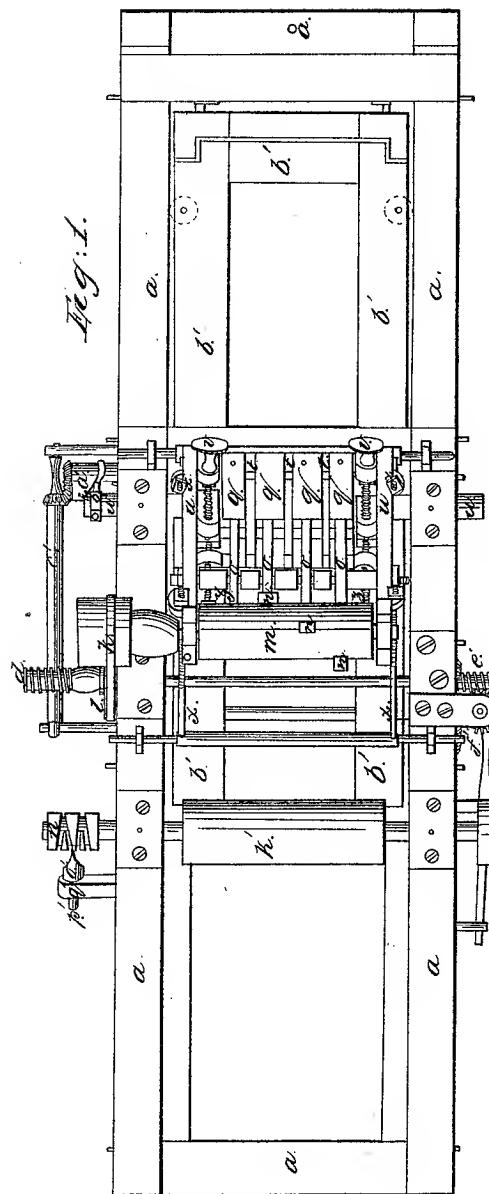


M. Nutting,
Dressing Stone.

2 Sheets, Sheet 1.

No 195.

Patented May 15, 1837.



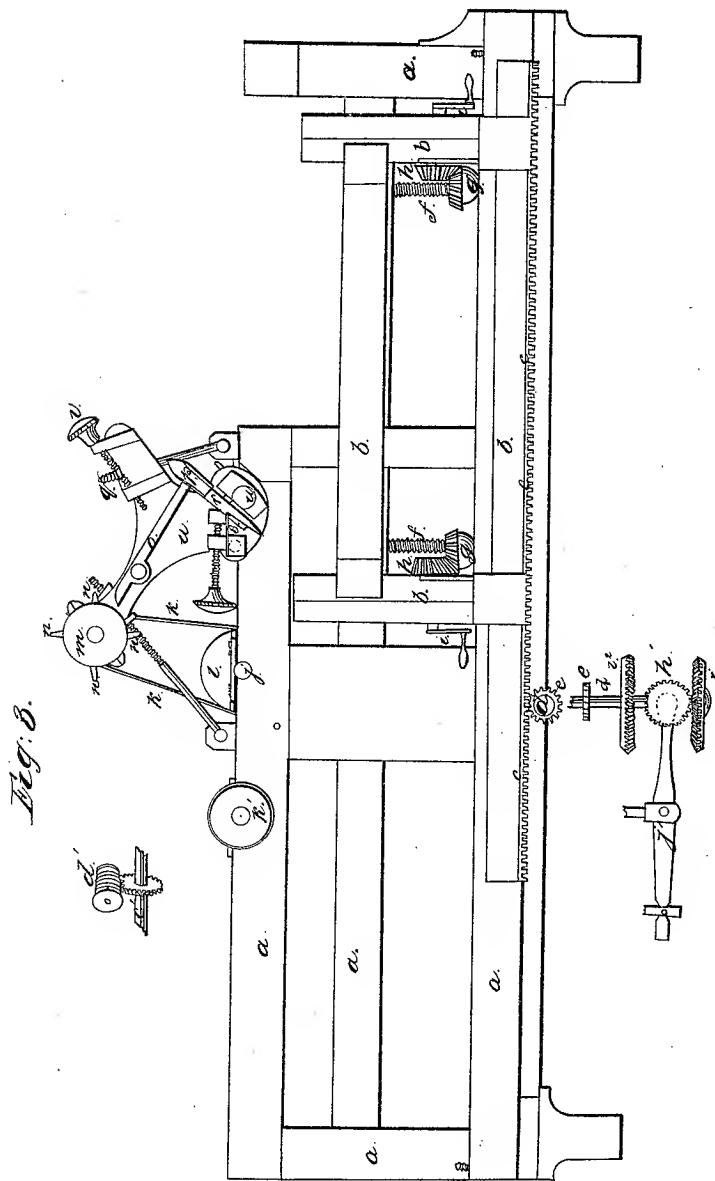
2 Sheets, Sheet 2.

M. Nutting,

Dressing Stone.

No 195.

Patented May 15, 1831.



UNITED STATES PATENT OFFICE.

MIGHILL NUTTING, OF PORTLAND, MAINE.

MACHINE FOR CUTTING AND DRESSING STONE.

Specification of Letters Patent No. 195, dated May 15, 1837.

To all whom it may concern:

Be it known that I, MIGHILL NUTTING, of Portland, in the State of Maine, have invented certain Improvements in Machinery for Cutting, Dressing, Grinding, and Polishing Granite, Marble, and other Kinds of Stone used for Architectural and other Purposes; and I do hereby declare that the following is a full and exact description 10 thereof.

In the accompanying drawing, Figure 1 is a top view, Fig. 2, a side elevation, and Fig. 3, a longitudinal, vertical section of the machine, and in each of these figures wherever the same parts are shown, they are designated by the same letters of reference.

The frame is marked *a, a, a*, and for this no particular size can be given, as it may vary from three, or four, to twenty-five, or 20 thirty, feet in length, and from two to ten feet in width, more or less, according to the kind of work it is intended to perform. Within the main frame *a, a, a*, there is a carriage *b, b*, upon the top of which, the 25 stone is to rest. On the under side of each of the lower side rails of this carriage, there is a rack, shown at *c, c*, in the section, Fig. 3, into which racks mesh two pinions *e*, fixed upon a shaft *d*, which crosses, and runs in 30 suitable bearings on, the lower side of the main frame, and by means of which the carriage is made to traverse back and forth, in a way to be presently described.

The top frame of the carriage *b', b'*, is 35 made to be raised and lowered, for the purpose of regulating the height of the stone. In Figs. 2, and 3, *f, f*, are screws, the upper ends of which enter, and support, the top frame, having their points square, or being 40 otherwise so fixed as to prevent their turning; *g, g*, are nuts which are to act upon these screws; the lower end of these nuts are hemispherical, and set in cups, or hollows, adapted to them, on the lower rail; 45 their upper sides are formed into bevel wheels, as shown in the drawing, and they are turned by the bevel wheels *h, h*, the shafts of which pass through the frame, and are carried by winches *i, i*. One of these 50 screws, and its appendages, is placed at each corner of the frame.

The cutting apparatus, or cuttre frame, is situated on the top of the main frame; *j* being the driving shaft to which the moving 55 power of any suitable kind may be applied.

A band *k*, from the whirl *l*, gives motion to a cylinder *m*, carrying lifters *n, n*, set spirally around it; these lifters act upon the ends of the hammer levers, *o, o, o*, and raise the hammers *p, p, p*. In the top view, these 60 hammers are hidden by the springs *q, q, q*, which are intended to act upon the hammers with greater, or less, force. These hammers strike upon the heads of chisels *r, r*, which slide in suitable sockets, and have 65 on them a pin, or shoulder, which determines the depth to which they may descend; they have also each a bearing by means of a shoulder, upon a spring *s*, by which they are raised, and sustained, above the stone, 70 after every stroke of the hammer. The springs *q, q*, are all placed upon a shaft *t, t*, which has journals fitted to holes in the cheeks *u, u*, of the cutting apparatus, or 75 cutter frame, and by means of the set screws *v, v*, these springs may, simultaneously, be raised, or lowered, so as to act upon the hammers with a graduated force. The cheeks *u, u*, which sustain the axes, and the other parts of the cutting apparatus, are 80 affixed upon the stout axis *w, w*, which has firm bearings upon the main frame; and the whole apparatus, sustained by the cheeks, *u, u*, is capable of being changed in position 85 by turning on this axis, so that the chisels may stand vertically, or have any desired inclination given to them. The screw braces *x, x*, serve to fix this cutting frame, in the required position; *v, v*, are the set screws by 90 which the spring shaft *t, t*, is regulated; and *z, z*, set screws by which the springs, *s*, which raise the chisels, are regulated, these springs being also placed upon a shaft, enabling the whole of them to be moved together. 95

It is necessary that the whole cutter frame should be vibrated laterally, and to effect this, I place a cylindrical, revolving hub *a'*, Fig. 1, upon the side of the frame, having a zig-zag, or oblique, groove around it, 100 within which a projecting pin upon the axis, *w*, enters, as shown at *b²*; the axis *w*, is made of sufficient length to allow of this lateral motion; and the hub *a'*, is made to revolve by the bevel geared shaft *c'*, which has a 105 pinion upon it into which the endless screw *d'*, upon the shaft *j*, meshes. This pinion and shaft, with the endless screw, are shown separately at *c', d'*, in the sectional drawing Fig. 3. 110

Upon the shaft j , there is a second endless screw e' , which meshes into a pinion f' , upon the vertical shaft g' , the lower end of which shaft carries the beveled pinion h' , which meshes into the beveled wheels i' , i'' , upon the shaft d . The lever j' , serves to reverse the motion of the carriage, by changing the gear of the pinion h' , with i' , or i'' , in a manner well known.

With this cutting and dressing machine I combine a grinding or polishing cylinder, which, when used, is driven by the same power, and is to operate upon a stone upon the same carriage as that employed in the process of dressing. One of these cylinders is shown at k' , driven by a band l' , from the shaft m' . The cylinders may be changed at pleasure, according to the operation which they are to perform, or the grinding, or polishing material used with them. To these cylinders, it is absolutely necessary to give a longitudinal, vibratory motion; and this I effect by cutting right and left-handed spiral, or screw, grooves upon the cylindrical hub n' , upon the axis of the cylinder, which grooves run into each other, as shown in the drawing; o' , is a guide piece, revolving on a pin p' , in the standard q' , and having an edge which fits into the grooves on the hub; this guide piece is turned by the action of the groove, whenever it arrives at the termination of one spiral, the groove being so formed as to produce this effect, and the width of the edge of the guide piece being such as to keep it in its proper groove, until turned in the manner de-

scribed. The effect of this in vibrating the cylinder will be obvious.

I have not said anything respecting the form, or size, of the chisels, or relating to other minor arrangements which the judicious workman will vary according to circumstances, and which are not, from their nature, reducible to any fixed rules; but I have fully set forth the manner in which I arrange and combine the essential, and characteristic, parts of my machine; and I claim as my invention—

1. The application of the hemispherical nuts, as arranged for raising, and regulating, the height of the stone to be cut, ground, or polished.

2. I, also, claim the particular manner in which I have arranged the springs above the hammers, and those which sustain the chisels, upon shafts, by means of which they can be simultaneously raised and lowered, as set forth.

3. I claim, likewise, the manner in which I have combined and arranged the respective parts of the cutter frame, so that the position of the chisels, and of the other parts connected therewith, may be regulated by the turning of the cutter frame upon its axis; and the manner of vibrating this frame by a lateral motion communicated to the said axis.

MIGHILL NUTTING.

Witnesses:

THOS. P. JONES,
W. THOMPSON.